

### **Operation Manual** Operation Manual MICROPURGE® MP100/MP100CE **Peristaltic Pump**



### **NEED HELP? SCAN OR CLICK HERE TO CONTACT US**





**Air-Met Scientific** www.airmet.com.au

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### INTRODUCTION

### INTENDED USE

The QED Environmental Systems Inc, MP100/MP100CE is a portable peristaltic pump designed for collecting shallow groundwater and surface water samples. It operates using a 12V power supply, making it great for field use.

Peristaltic pumps work on the principle of peristalsis, utilizing a flexible tube and rollers at the pump head. The fluid only contacts the inside of the tube, making cleaning and maintenance easy and preventing cross-contamination. The pump's speed is adjustable for controlling flow rate, and it includes a speed direction switch for back flushing.

The MP100CE model uses a pump head cover 1/4 turn fastener that makes it a CE Compliant design. The MP100 uses a wingnut-style 1/4 turn fastener for easy removal without any tools that is NOT CE Compliant. The operation and maintenance of both models is identical throughout this manual, and so the name MP100 will be used to refer to both pump designs, unless noted otherwise.

<u>AWARNING</u>
<ul> <li>PERSONAL PROTECTIVE EQUIPMENT</li> <li>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:         <ul> <li>Protective eyewear, and hearing protection</li> <li>Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer</li> </ul> </li> </ul>
<ul> <li>EQUIPMENT MISUSE HAZARD</li> <li>Misuse can cause death or serious injury.</li> <li>For professional use only – Read the operator's manual thoroughly before use.</li> <li>Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> <li>Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals.</li> <li>Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals.</li> <li>Do not leave the work area while equipment is energized or under pressure.</li> <li>Turn off all equipment and disconnect power supply when equipment is not in use.</li> <li>Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.</li> <li>Make sure all equipment is rated and approved for the environment in which you are using it. Unit is not certified for use in ATEX environments.</li> <li>Use equipment only for its intended purpose. Call QED Environmental for information.</li> <li>Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>Do not kink or over bend hoses or use hoses to pull equipment.</li> <li>Keep children and animals away from work area.</li> <li>Moving parts can pinch or crush fingers and other body parts. Keep clear of moving parts. Do not operate equipment with guards or covers removed.</li> <li>12V electrical systems can cause electrical shock to users - Follow all instructions, use standard electrical safety practices, ensure secure connections, and seek help if unsure.</li> <li>Comply with all applicable safety regulations.</li> </ul>

SETUP & OPERATION COMPONENTS



- 1. Pump head assembly
- 2. Speed control knob
- 3. Rotation direction (forward/reverse)
- 4. Power ON / OFF
- 5. Voltmeter
- 6. Resettable circuit breaker (6A)
- 7. 12V power cable
- 8. Power cable connector
- 9. Control port for MicroPurge MP30 Water Level/Drawdown meter

### MicroPurge Water Level/Drawdown Meter Interface (optional)

The MicroPurge MP30 Water Level/Drawdown Meter can be used to control the peristaltic pump operation to prevent excessive water level drawdown in the well. Using the controller cable provided with the MP30 unit, attach one end of the cable to the control port on the MP30 unit and the other to the control port located on the peristaltic pump panel. When the MP30 is in Drawdown Mode, if the water level in the well drop below the

preset depth of the probe, the MP30 unit will send a signal to the peristaltic pump to pause operation. When the water level rises above the probe depth again or the probe is lowered further, the pump will resume operation.

Replacement & Consumable Parts

Silicone Rubber Tubing:

3/16" (4.8mm) ID, equivalent to L/S 15 size	Part Number: 42402
1/4" (6.4mm) ID, equivalent to L/S 24 size	Part Number: 42403
5/16" (7.9mm) ID, equivalent to L/S 35 size	Part Number: 42404
Pump Head Cover (non CE Compliant)	Part Number: 42401
Pump Head Cover (CE Compliant)	Part Number: ENV42422
Replacement Roller Assembly	Part Number: 42400
Power Cord	Part Number: 42370

(NOTE: To ensure the optimal performance and longevity of your pump, it is mandatory to use only our specified tubing. Failure to do so will result in the voiding of the warranty)

### SETUP

Tools and equipment needed: Silicone tubing, Standard (flat) head screwdriver, Tubing cutter, 12VDC Power Supply

- 1. Ensure the battery is disconnected and the power switch is in the OFF position.
- 2. To access the pump head, loosen cover fasteners by turning counterclockwise 1/4 turn with a standard head screwdriver to unlock and remove the cover, then loosen the thumbwheel on the tubing clamp.





3. Cut a piece of silicone tubing long enough to wrap around the inside of the pump head and extend over the edge of the case. The minimum length recommended is 16 inches (40.5 cm), but the silicone tubing can be as long as desired to easily connect to the drop tubing in the well. If there is existing tubing in the pump head, this should be removed. Note, the pump should never be run with guard or tubing clamp removed.

4. If there is existing tubing in the pump head, this should be removed. Lay new cut tubing on top of the roller assembly, see picture below. The roller assembly should be parallel with the QED logo.



5. With the Power OFF. Rotate by hand the roller assembly in a clockwise or counterclockwise motion, while pushing the tubing down into place around the perimeter of the motor housing.



6. Install the cover and tighten the cover fasteners by turning them with a standard head screwdriver clockwise 1/4 turn to lock. DO NOT OPERATE WITHOUT GUARDS IN PLACE. Secure tube with the clamp and tighten thumbwheel until firmly seated. See picture of reassembled pump unit with tubing, below.



#### SYSTEM OPERATION

- 1. Complete the "Setup" instructions above.
- 2. Ensure toggle switch is turned to OFF, and the speed control knob is turned to 0.
- 3. Connect the drop tubing from the well to the silicone pump tubing, taking note of the direction of pump rotation. Drop tubing is inserted into the silicone tubing on the pump. If leaking occurs, the tubing interface can be secured with hose clamps or zip ties. With the rotation switch in the forward (FWD) position, the rotor will turn clockwise and the intake side of the tubing will be at the bottom of the pump.
- 4. Connect the power cord to the connector on the panel.
- 5. Connect the power cord clamps to a 12VDC battery or power supply terminals, taking note of the polarity; red is positive (+), black is negative (-).
- 6. Determine correct flow direction based on tubing setup, toggle flow direction switch to desired direction.
- 7. Turn power toggle switch to ON.
- 8. Increase the speed with the dial, there will be a delay in water coming to the surface.
- 9. To power down unit, turn power toggle switch to OFF and disconnect Power cable.



#### SYSTEM MAINTENANCE + TRANSPORT

<u>Tubing:</u> QED recommends the use of a silicone tubing for proper performance of the pump; use of incorrect tubing or tubing material may damage the pump head and void the warranty.

<u>Pump System:</u> While designed for field use, in the event that water gets on the control panel or inside the case, there are drain holes at the bottom of the case to help reduce the chances of water damage. It is recommended to stop pumping and drain water before continuing to operate the pump.

<u>Power Supply:</u> The recommended power source is a 12 volt battery, typically lead acid/AGM type. A power supply can be used if it meets the minimum output requirement of 12.6 volts and 3.0 amps. If the power supply drops below 10 volts, the unit will shut down.

<u>Power Cord</u>: Do not use any damaged or kinked power cord. Power cord replacements are available from QED Environmental (QED Part Number 42370).

<u>Transport</u>: Disconnect all tubing and cables prior to closing the pump unit case. When transporting the MP100 Peristaltic Pump, ensure that both latches are fully secured and seated on the case. While the MP100 design is rugged, avoid dropping the case or tossing it into your vehicle.

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### **TECHNICAL SPECIFICATIONS**

Maximum water depth below ground surface: Up to 30 ft of lift (at sea level)

Maximum allowed backpressure: 30psi

Overall Case Dimensions: 16.44 x 13.00 x 6.82 in

Operating Temperature: 36°F to 140°F

Power Source: 12 VDC

Operating Current: 2 Amps

Overcurrent Protection: 6 Amps

### Weight: 13.5 lbs

### APPROXIMATE FLOW RATES

Pump Tubing	Pump Tubing	RPM	Maximum	Maximum	Maximum	Recommended
Dimensions (inches) & L/S size	Dimensions & Wall Thickness (mm)		Lift (feet)	Flow LPM	Flow GPM	Drop Tubing Size
0.375" OD x 0.190" ID (L/S 15)	4.8 ID x 9.6 OD, 2.4 WT	240	30′	0.7	0.18	1/4" OD (6.4mm)
0.440" OD x 0.250" ID (L/S 24)	6.4 ID x 11.2 OD, 2.4 WT	240	30'	1.1	0.30	5/16" OD (8.0mm)
0.500" OD x 0.310" ID (L/S 35)	7.9 ID x 12.7 OD, 2.4 WT	240	29'	1.5	0.39	3/8" OD (9.6mm)

\*maximum flow rates may vary depending on motor speed, tubing size and pumping conditions

APPROXIMATE BATTERY DISCHARGE RATE

Battery Capacity (AH)	Pump Tubing Dimensions (inches) & L/S size	Time Pumped (min)	Liters Pumped	Gallons Pumped
5		360	41	11
12	0.375" OD x 0.190" ID (L/S 15)	864	102	27
33	(L/3 13)	2376	283	75
5		300	34	9
12	0.440" OD x 0.250" ID	720	87	23
33	(L/S 24)	1980	238	63
5		225	177	47
12	0.500" OD x 0.310" ID	540	64	17
33	(L/S 35)	1488	26	47

\*Discharge rates may vary depending on motor speed, tubing size and pumping conditions

#### CLEANING

Clean the interior of the MP100 periodically, with a phosphate-free cleaning agent (Simple Green, Dawn Liquid Soap, Etc). When cleaning ensure that power has been turned off to the unit. Turn the toggle switch to OFF and remove any connections to the power source.

#### ROLLER REPLACEMENT

After repeated use, the roller assembly (QED Part Number 42400) on the unit may need to be replaced to maintain sufficient pressure on the tubing. This replacement, and the swapping on tubing, are the only user repairs for this device. For Tubing replacement, see the SETUP section of this manual. DO NOT REMOVE CONTROL PANEL OR SCREWS ON THE EXTERIOR OF THE CASE. Instructions are included below for replacement of the pump roller assembly:

1. Loosen the two screws with a standard head screwdriver and remove the cover from the pump.



2. Using the 2.5mm Hex drive wrench loosen the set screw holding the roller assembly to the motor shaft. Lift the old roller assembly off from the motor shaft.



3. Align the set screw of the new roller assembly to the flat on the motor shaft and slide the assembly onto the shaft. Note there is no top or bottom orientation to the roller assembly.



4. Ensure the top of the roller assembly is flush with the end of the motor shaft. Using the 2.5mm Hex drive wrench tighten the set screw holding the roller assembly to the motor shaft. Maximum recommended torque is 1.28Nm (0.94 ft-lbs). Use caution to not under-tighten or over-tighten the set screw as damage to the set screw, motor shaft, and/or tool will result.

Correct installation



Incorrect installation



Incorrect Installation



5. Reinstall the motor cover and tighten the two quarter-turn fasteners. Installation is now complete.

TROUBLESHOOTING GUIDE				
OBSERVED ISSUE	POSSIBLE CAUSE	REMEDY		
PUMP DOES NOT START	Battery not charged	Charge or replace the battery		
	Faulty power connection	Check and secure all power connections		
	Motor malfunction	Send to QED for repair and service		
REDUCED FLOW OR NO FLOW	Tubing blockage	Clear or replace the tubing		
	Worn or damaged tubing	Replace the tubing		
	Roller assembly not functioning	Inspect and replace the roller assembly		
PUMP RUNS BUT NO FLUID MOVES	Tubing not properly seated	Re-seat or replace the tubing		
	Tubing rupture	Replace the tubing		
EXCESSIVE NOISE OR VIBRATION	Roller assembly misalignment	Realign or replace the roller assembly		
	Loose safety cover	Tighten motor cover and tubing clamp		
FLUID LEAKAGE	Tubing damage	Replace the tubing		
	Improper tubing installation	Reinstall the tubing correctly		

The equipment in this manual is protected under U.S. and foreign patents issued and pending. For a complete list of patents visit <u>www.graco.com/patents</u>.

The equipment in this manual is protected under Registered Trademarks. For a complete list of Registered Trademarks and Trademarks, visit <u>www.graco.com/trademarks</u>.

WARRANTY INFORMATION

Q.E.D. ENVIRONMENTAL SYSTEMS, INC. ("QED") warrants to the original purchaser ("Purchaser") of its groundwater sampling products ("Products") that the products shall be free of defects in materials and workmanship on the date of sale, subject to the limitations below. Any failure of the products to conform to this warranty will be remedied by QED in the manner provided herein.

This warranty shall be limited to the duration and the conditions set forth below. Warranty duration is calculated from the original date of purchase.

- Dedicated-Use System Products Ten (10) year warranty on dedicated bladder pumps with PTFE (Teflon<sup>®</sup>) bladders equipped with original equipment inlet screens and used in periodic, non-continuous groundwater sampling (up to 52 samples events per year.) Five (5) year warranty on dedicated bladder pumps using Teflon-free proprietary polymer bladders. All other components, equipment and accessories are warranted for one (1) year except as stated below.
- 2. Portable Systems and Controls Sample Pro portable-use pumps, MicroPurge Controllers, Peristaltic Pumps and Water Level and Drawdown Meters are warranted for one (1) year. Hose reel and caps are warranted for ninety (90) days. Tubing used in a Portable System is covered by a ninety (90) day material and workmanship warranty. There will be no warranty for application on tubing when used as part of a Portable System.
- 3. Separately Sold Parts, Spare Parts Kits and Repairs Separately sold parts and spare parts kits are warranted for ninety (90) days. Repairs performed by QED are warranted for ninety (90) days from date of repair or for the remaining term of the original warranty, whichever is longer.

Purchaser's exclusive remedy for breach of said warranty shall be as follows:

If Purchaser notifies QED in writing within the applicable warranty period of a claimed defect in the Product and QED determines after inspecting the Product that the defect is covered by the warranty, QED will repair the Product without charge to Purchaser. If QED for any reason cannot repair a Product determined by QED to be covered by this warranty within four (4) weeks after receipt of the defective Product, then QED's sole responsibility shall be, at its option, either to replace the defective Product with a comparable new unit at no

# charge to Purchaser or to refund the purchase price paid by Purchaser. QED's obligation to repair, replace or refund are conditioned upon the Purchaser's return of the claimed defective Product to QED, after receiving authorization to do so from QED. In no event shall claimed defective Products be returned to QED without its authorization. If the Product is determined not to be defective within the terms of this warranty, then all costs for repair, parts and labor that are authorized by Purchaser shall be borne by Purchaser.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY (INCLUDING BUT NOT LIMITED TO THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE), WHICH OTHER WARRANTIES ARE EXPRESSLY EXCLUDED HEREBY. QED neither assumes, nor authorizes any person to assume for it, any other obligation or liability in connection with the Products. Purchaser agrees that in no event will QED be liable for incidental, consequential or special damages (including but not limited to lost profits, lost sales, or injury to persons or property) and that Purchaser's sole remedy is the above warranty.

This warranty will be void in the event of unauthorized disassembly of component assemblies. This warranty will also be void if the defect in a Product results from abuse; operating, installing or maintaining the Product in a manner other than in accordance with QED's written recommendations; uses or applications other than the intended use or application, as indicated in the manual; or exposure to chemical or physical environment beyond the designated limits of materials and construction. This warranty does not cover, and QED shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, substitution of non-QED component parts, or the selection of improper material or product configuration for Purchaser's application. Nor shall QED be liable for malfunction, damage or wear caused by the incompatibility of QED equipment with structures, accessories, equipment or materials not supplied by QED, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by QED. QED shall be released from all obligations under all warranties if any Product covered hereby is repaired or modified by persons other than QED's service personnel unless such repair by others is made with the written consent of QED.

### **RESPONSIBILITY OF THE PURCHASER**

Purchaser is responsible for notifying QED of the defect, malfunction, or other manner in which the terms of this warranty are believed to be breached. In the event of a warranty claim, Purchaser must contact the Customer Service Department of QED and:

- 1. Identify the product involved (by model or serial number or other sufficient description that will allow QED to determine which product is claimed defective);
- 2. Specify where, when, and from whom the Product was purchased;
- 3. Describe the nature of the defect or malfunction; and
- 4. Send the malfunctioning component, after authorization by QED, to:

QED Environmental Systems, Inc.

2355 Bishop Circle West Dexter, MI 48130 Toll Free North America: (800) 624-2026 Company Main: (734) 995-2547

> Fax: (734) 995-1170 Web: www.qedenv.com Email: info@qedenv.com

### )FCLARATION OF CONFORMITY

### EU-DECLARATION OF CONFORMITY

ATTIKTIES DEKLARACIJA DEKLARACIJA ZGODNOŚCI UE, DIKJARAZZJONI TA' KONFORMITA TAL-UE, EU IZJAVA O SUKLADNOSTI, EÚ VYHLÁSENIE O ZHODE, EC ДЕКЛАРАЦИЯ ЗА CЪOTBETCTBИЕ, DECLARAȚIA UE DE CONFORMITATE

### Model

### MP100CE Peristaltic Sampling Pump

Modèle, Modell, Modello, Μοντέλο, Modelo, Malli, Mudel, Modelis, Mudell, Mogen, Samhr

ISO 9001 Registered

### Part

### **MP100CE**

Besteinr., Type, Teil, Codice, Del, Múpoç, Peça, Referencia, Osa, Součást, Részegység, Dala, Dalis, Część, Taqsima, Časf, Част, Páirt, Parte

### Complies With The EC Directives:

Voldoet aan de EG-richtlijnen, Conforme aux directives CE, Entspricht den EG-Richtlinien, Conforme alle direttive CE, Overholder EF-direktiverne, Σύμφωνα με ης Οδηγίες της EK, Em conformidade com as Directivas CE, Cumple las directivas de la CE, Tayttää EY-direktivien vaatimukset, Uppfyler EG-direktiven, Shoda se směmicemi ES, Vastab ED direktividel, Kleideglti az EK irányelvek követelményet, Atbilst EK direktivam, Attilista šias ES direktivas, Zgodność z Dyrektivaami UE, Konformi mad-Direttivi tal-KE, V skladu z direktivami ES, Je v súlade so smemicami ES, Cuawecnivaeva de ID, A ag teacht le Treoracha an CE, Respectá directivele CE

#### 2006/42/EC Machinery Directive

2015/863/EU RoHS Directive with exemption 6C

#### Standards Used:

Gebruikte maatstaven, Normes respectées, Verwendete Normen, Norme applicate, Anvendte standarder, Πρότυπα που χρησιμοποιήθηκαν, Normas utilizadas, Normas aplicadas, Sovellettavat standardit, Tillämpade standarder, Použité normy, Rakendatuid standardid, Alkalmazott szativányok, Izmantotie standarti, Taikyti standartai, Užyte normy, Standards Užati, Uporabljeni standardi, Použité normy, Vanonaaawa стандарти, Caighdeáin arna n-úsáid, Standarde utilizate

EN 809:1998+A1:2009

Aangemeide instantie voor richtijn, Organisme notifié pour la directive, Benannte Stelle für diese Richtlinie, Ente certificatore della direttiva, Bernyndiget organ for direktiv, Aoxorvuµúvo ópyovo Oðnylog, Organismo notificado relativamente à directiva, Organismo notificado de la directiva, Direktivin mukaisesti ilmoitettu tarkastusialitos, Armät organ för direktivet, Üfedhé oznámený orgán pro směrnici, Teavitatud asutus (direktivi järgi), Az irányelvvel kapcsolatban értesitett testület, Pilnvarotă iestăde saskaņă ar direktivu, Apie direktiva, Informuota institucija, Cialo powiadomione dla Dyrektywy, Korp avžat bid-Direttiva, Priglašeni organ za direktivo, Notifikovaný orgán pre smernicu, Horwфициран opraн за Директива, Comhlacht ar tugadh fógra dó , Organism notificat In conformitate cu directiva

### Approved By:

Goedgekeurd door, Approuvé par, Genehmigt von, Approvato da, Godkendt af, Έγκριση από, Aprovado por, Aprobado por, Hyväksynyt, Intygas av, Schválil, Kinnitanud, Jóváhagyta, Apstiprināts, Patvirtino, Zatwierdzone przez, Approvat minn, Odobril, Schválené, Ogoőpewo or, Faofa ag, Aprobat de

Michael Lindquist Engineering Director – QED

20 FEB 2025

Manufactured By: QED Environmental Systems, Inc 2355 Bishop Circle West Dexter, MI 48130 USA

Responsible Person: QED Environmental Systems, Inc 2355 Bishop Circle West Dexter, MI 48130 USA

This declaration of conformity is issued under the sole responsibility of the manufacturer. Deze conformiteitsverklaring wordt verstrekt onder volledige verantwoordelijkheid van de fabrikant. La présente déclaration de conformité est établie sous la seule responsabilité du fabricant. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller. La presente dichiarazione di conformità è rilasciata soto la responsabilité esclusiva del fabbricante. Denne overensstemmelseserklæring udstedes på fabrikantens ansvar. der hersteller. La presente ocharazone o comornia e nascuta sono la responsabilita estosiva dei natoricante. Denie overenseeminestesenaaming lossiedes pa aborianters ansvar. Η πορούσο άξλωση συμμόρφωσης rukolitoria με αποκλοτικής μαθύη του κατοικτικούτη. A presente declaração de conformidade é emitida sob a exclusiva responsabilidad do fabricante. La presente declaración de conformidad se expide bajo la exclusiva responsabilidad de fabricante. Tama vaatimustenmukaisuusvakuutus on annettu valmistajan viksinomaisetia vastuuta. Denna forsäknan om överenesstämmelse utifardas på tillverkarens eget anavar. Toto prohišení o shodé se vydává na avýhradní odpovédnosť výrobce. Kásesiev vastavusdeklaratsioon on välja antud toolja ainuvastutusel. Ezt a megfelelőségi nyilatkozatol a gvártó kizárólagos felelőssége mellett adják ki. Ši atbilstibas deklarácija ir izdota vienīgi uz ražotāja atbildību. Ši atbilstibas deklaracija išduota tik gamintojo atsakomybe. Ninejsza deklaracija zgodności wydana zostaje na wyłączną odpowiedzialność producenta. Din id-dkjarazzjoni tal-konformik digelná tinthanej tahti in-responsabilitad unikta tal-manifattur. Ta izjava o skladnosti je izdana na lastno odgovorost proizvajale. Toto vyhišenie o zhode sa vydáva na výhradnú zodpovednosť výrobou. Настоящата декларация за съответствие е издадена на отговорността на производителя: Prezenta declaratje de conformitate este enisă ne decundreze avvisival a nordivatorului. nisă pe răspunderea exclusivă a producătorului.



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